

Feasibility Studies for Various New Concepts Related to Phasing in of the New Secondary Screening System at the Tracy Fish Collection Facility

Investigators

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Summary

This study will investigate rehabilitating the secondary fish screening system at the Tracy Fish Collection Facility (TFCF). The secondary system provides further dewatering of flow from the four bypasses located on the primary louver. A dual-louvered screening system within the secondary flow channel guides fish into below-ground holding tanks. The 50-plus year-old facility no longer provides fish salvage efficiencies near its original design goals. Changing hydraulic, debris, and biological conditions in the Delta have negatively impacted the facility. This study will develop an engineering feasibility report defining viable options for improving the secondary dewatering, fish holding, and fish loading facility. Options will be considered ranging from component modifications to total facility replacement. Feasibility level drawings and costs will be presented for the options studied. Phasing in of a new secondary system is a recommendation of the CalFed/South Delta Fish Forums.

Problem Statement

There are numerous issues that prohibit the TFCF secondary dewatering and fish holding facility from operating under guidelines originally established for optimum fish salvage. Since TFCF construction, many new facilities have been built in the south Delta that influences the flow and timing of water arriving at the facility. Operators and biologists at the facility see more frequent occurrences of extremely low water periods as evidenced by low bypass ratios and less than full bypass flow to the holding tanks. During these periods, fish guidance to the louver bypasses is reduced, holding and predation in the bypasses increase, and water quality in the holding tanks is generally poor. Facility operators report during extreme low water there is insufficient bypass flow to operate the fish salvage facility. The energy head (water elevation in front of the primary louvers minus the water elevation in the secondary channel downstream of the

secondary louvers) necessary to drive the bypasses to achieve peak fish salvage efficiency is commonly not available at the facility. Thus, primary louver bypass ratios are often less than recommended in the facility operation guidelines.

Guiding Questions/Hypothesis

1. Can fish friendly pumps be used to produce additional head for the existing secondary facility?
2. Can the existing secondary screening channel, holding tanks and volume control pumps be replaced with a new behind the louver pumped-gravity system?
3. Can a second secondary dewater and fish salvage system be constructed yielding a dual system?
4. Where should the new secondary be located?
5. How can the fish salvage facility operate while the changes are being constructed?

Materials and Methods

The study will be limited to a feasibility level design. No field activities will be initiated as part of this study. The main assumption is fish salvage efficiency can be improved to original design levels through increased flexibility to control bypass flows, improved debris handling in the secondary channel and holding tanks and improved fish transfer facilities.

The study will be conducted at the Denver Technical Service Center (TSC) in Denver, Colorado. The study will be conducted using a multidiscipline design team composed of engineers and fishery biologists. Tracy management and TFCF operators will be drawn upon to provide input and review to the study.

Coordination and Collaboration

The study will be coordinated between the TSC, Mid Pacific Region and TFCF staffs and the interagency Tracy Technical Advisory Team (TTAT) through regular updates and meetings.

Engineers and fishery biologist from the Denver Technical Center and the TFCF will be actively involved in the study. The individuals involved are career designers and researchers with years of experience working in the fishery-engineering field.

Endangered Species Concerns

This study will not require permitting. However, issues pertaining to handling of endangered species during the secondary screening/separating process will be at the forefront of the design.

Dissemination of Results

Data analysis will be largely related to facility operation and design. We do not anticipate needing to acquire any new data for the study

We will produce a feasibility design report that can be issued as a Tracy Technical Report. We expect the study to be completed by October 2010.

Literature/References

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